

CLAIMS

What is claimed is:

1. A portable computer system comprising:

a bus;

a processor coupled to said bus;

a housing comprising an electronic muscle material, said electronic muscle material, when moved, causing said processor to behave in a prescribed manner.

a display device coupled to said bus and for providing a visual display;

and

wherein said processor implements a user interface for controlling said display.

2. The portable computer system of Claim 1 further comprising a battery and wherein movement of said electronic muscle material causes charging of said battery.

3. The portable computer system of Claim 1 wherein movement of said electronic muscle material causes said processor to sense handling by user for determination of left-handedness or right-handedness thereof.

4. The portable computer system of Claim 3 wherein in response to said determination of handedness said electronic muscle material generates a plurality of function buttons in the proximity of user's fingers.

5. The portable computer system of Claim 4 wherein any of said plurality of function buttons vibrate to apprise user of relevant message being displayed.

5 6. The portable computer system of Claim 4 wherein any of said plurality of function buttons protrudes from said housing to apprise user of relevant message being displayed.

10 7. The portable computer system of Claim 1 wherein said electronic muscle material vibrates for apprising the user of a message being displayed.

8. The portable computer system of Claim 1 wherein said electronic muscle material conforms to the shape of user's hand for improved ergonomics.

15 9. The portable computer system of Claim 8 wherein said conformance to shape of user's hand generates contour data which is used by said processor to identify a user for purpose of user authorization.

20 10. The portable computer system of Claim 1 wherein the electronic muscle material vibrates at a frequency as specified by said processor for use as a speaker.

25 11. The portable computer system of Claim 1 wherein said electronic muscle material vibrates at a frequency of external sound for use as a microphone.

12. The portable computer system of Claim 11 wherein the location of said vibration moves spatially about the housing for tracking a strongest sound signal.

5

13. A portable electronic device comprising:

a processor coupled to a bus;

a display module for displaying information and coupled to said bus;

a memory for storing information and coupled to said bus;

an electronic muscle material coupled to said bus and for use as an input device.

14. A portable electronic device as described in Claim 13 wherein said electronic muscle material comprises a plurality of buttons for user input.

15. A portable electronic device as described in Claim 14 wherein said electronic muscle material generates information used by said processor for detecting the placement of user fingers on said electronic muscle material.

20

16. A portable electronic device as described in Claim 15 wherein locations of said plurality of buttons are defined based on said placement of said user fingers on said electronic muscle material.

25

17. A portable electronic device as described in Claim 13 wherein a portion of said electronic muscle material functions as a speaker.

18. A portable electronic device as described in Claim 17 wherein the location of said portion is adjusted by said processor to optimize sound characteristics.

5

19. A portable electronic device as described in Claim 13 wherein a portion of said electronic muscle material functions as a microphone.

20. A portable electronic device as described in Claim 19 wherein the location of said portion is adjusted by said processor to optimize detection characteristics.

21. A portable electronic device as described in Claim 14 wherein said electronic muscle material generates information used by said processor for detecting the handedness of a user.

22. A portable electronic device as described in Claim 14 wherein said electronic muscle material generates information used by said processor for detecting the identity of a user.

20

23. A portable electronic device as described in Claim 13 further comprising a battery and wherein, in response to movement of said electronic muscle material, said electronic muscle material charges said battery.

24. In a portable electronic device, a method of responding to a user comprising the steps of:

a) in response to said user handling said portable electronic device, an electronic muscle material therein generating information; and

b) a processor of said electronic device processing said information and performing a prescribed function.

25. A method as described in Claim 24 wherein said information comprises a user hand contour and wherein step b) comprises said processor performing a user authentication function.

26. A method as described in Claim 24 wherein said information comprises a user finger placement and wherein step b) comprises said processor forming buttons within said electronic muscle material that align with positions of said finger placement.

27. A method as described in Claim 24 wherein said information comprises a user hand contour and wherein step b) comprises said processor determining the handed-ness of said user.

28. A method as described in Claim 24 wherein said information comprises a user hand contour and wherein step b) comprises said processor forming said electronic muscle material into a shape that aligns with said user hand contour for providing user comfort.